

1 WE CLAIM:

1 1. A spindle motor for use in a disk drive having a rotatable head stack assembly, the spindle
2 motor comprising:

3 a spindle motor hub;

4 a magnet radially attached about the spindle motor hub; and

5 a spindle motor stator including:

6 a stator rim; and

7 a plurality of stator teeth arrayed about and internally extending from the
8 stator rim, the stator teeth being sized to fit about the magnet in operable
9 communication therewith for rotating the spindle motor hub, the stator teeth having
10 laminate layers, the stator teeth having at least one reduced height stator tooth, the
11 reduced height stator tooth having fewer laminate layers than a remainder of the
12 stator teeth, the reduced height stator tooth being positionable adjacent the head
13 stack assembly for allowing the head stack assembly to pivot over the reduced
14 height stator tooth.

1 2. The spindle motor of Claim 1 wherein the reduced height stator tooth has a width greater
2 than a remainder of the stator teeth.

1 3. The spindle motor of Claim 1 wherein the reduced height stator tooth has a tooth body
2 portion and a distal shoe extending from the tooth body portion, the shoe is disposed adjacent the
3 magnet.

1 4. The spindle motor of Claim 3 wherein the distal shoe extends vertically beyond the tooth
2 body portion.

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1 5. A spindle motor for use in a disk drive having a rotatable head stack assembly, the spindle
2 motor comprising:

3 a spindle motor hub;

4 a magnet radially attached about the spindle motor hub; and

5 a spindle motor stator including:

6 a stator rim; and

7 at least one stator tooth extending from the stator rim, the stator tooth being
8 sized to fit about the magnet in operable communication therewith for rotating the
9 spindle motor hub, the stator tooth having a tooth body portion attached to the stator
10 rim and a distal shoe adjacent the magnet, the distal shoe extends vertically beyond
11 the tooth-body-portion, the stator tooth being positionable adjacent the head stack
12 assembly for allowing the head stack assembly to pivot over the stator tooth.

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1 6. A spindle motor for use in a disk drive having a rotatable head stack assembly, the
2 spindle motor comprising:
3 a spindle motor hub;
4 a magnet radially attached about the spindle motor hub; and
5 a spindle motor stator including:
6 a stator rim formed of at least two vertically stacked stator rim laminate
7 layers;
8 a plurality of stator teeth arrayed about and internally extending from the
9 stator rim, the stator teeth being sized to fit about the magnet in operable
10 communication therewith for rotating the spindle motor hub, the stator teeth each
11 being formed of at least two stator tooth laminate layers, the stator tooth laminate
12 layers being respectively attached to the stator rim laminate layers; and
13 at least one reduced height stator tooth having at least two reduced height
14 stator tooth laminate layers horizontally off-set from and vertically formed
15 towards each other, the reduced height stator tooth being positionable adjacent the
16 head stack assembly for allowing the head stack assembly to pivot over the
17 reduced height stator tooth.

1 7. The spindle motor of Claim 6 wherein the at least two reduced height stator tooth
2 laminate layers include an upper laminate layer and a lower laminate layer, the upper and lower
3 laminate layers are horizontally off-set from each other.

1 8. The spindle motor of Claim 6 wherein the at least one reduced height stator tooth
2 laminate layers include an upper laminate layer, a lower laminate layer, and an inner laminate
3 layer between the upper and lower laminate layers, the upper and lower laminate layers are
4 horizontally off-set from the inner laminate layer.

1 9. The spindle motor of Claim 6 wherein the at least two reduced height stator tooth
2 laminate layers include an upper laminate layer and a lower laminate layer, the lower laminate
3 layer extends horizontally from the stator rim, the upper laminate layer is formed towards the
4 lower laminate layer.

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1 10. A spindle motor for use in a disk drive having a rotatable head stack assembly, the
2 spindle motor comprising:
3 a spindle motor hub;
4 a magnet radially attached about the spindle motor hub; and
5 a spindle motor stator including:
6 a stator rim formed of at least two vertically stacked stator rim laminate
7 layers;
8 at least one stator tooth internally extending from the stator rim, the stator
9 tooth being sized to fit about the magnet in operable communication therewith for
10 rotating the spindle motor hub, the stator tooth being formed of at least two stator
11 tooth laminate layers horizontally off-set from and vertically formed towards each
12 other, the stator tooth laminate layers being respectively attached to the stator rim
13 laminate layers, the stator tooth being positionable adjacent the head stack
14 assembly for allowing the head stack assembly to pivot over the stator tooth.
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1 11. The spindle motor of Claim 10 wherein the stator tooth laminate layers include an upper
2 laminate layer and a lower laminate layer, the upper and lower laminate layers are horizontally
3 off-set from each other.

1 12. The spindle motor of Claim 10 wherein the stator tooth laminate layers include an upper
2 laminate layer, a lower laminate layer, and an inner laminate layer between the upper and lower
3 laminate layers, the upper and lower laminate layers are horizontally off-set from the inner
4 laminate layer.

1 13. The spindle motor of Claim 10 wherein the stator tooth laminate layers include an upper
2 laminate layer and a lower laminate layer, the lower laminate layer extends horizontally from the
3 stator rim, the upper laminate layer is formed towards the lower laminate layer.

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1 14. A spindle motor for use in a disk drive having a rotatable head stack assembly, the spindle
2 motor comprising:
3 a spindle motor hub;
4 a magnet radially attached about the spindle motor hub; and
5 a spindle motor stator including:
6 a stator rim; and
7 a plurality of stator teeth arrayed about and internally extending from the
8 stator rim, the stator teeth being sized to fit about the magnet in operable
9 communication therewith for rotating the spindle motor hub, the stator teeth having
10 laminate layers formed to a first thickness, the stator teeth having at least one
11 reduced height stator tooth, the reduced height stator tooth having laminate layers
12 formed to a second thickness less than the first thickness, the reduced height stator
13 tooth being positionable adjacent the head stack assembly for allowing the head
14 stack assembly to pivot over the reduced height stator tooth.

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1 15. The spindle motor of Claim 14 wherein the reduced height stator tooth has a width
2 greater than a remainder of the stator teeth.

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1 16. A disk drive comprising:

2 a disk drive base;

3 a head stack assembly rotatably attached to the disk drive base; and

4 a spindle motor attached to the disk drive base including:

5 a spindle motor hub;

6 a magnet radially attached about the spindle motor hub; and

7 a spindle motor stator including:

8 a stator rim; and

9 a plurality of stator teeth arrayed about and internally extending from

10 the stator rim, the stator teeth being sized to fit about the magnet in operable

11 communication therewith for rotating the spindle motor hub, the stator teeth

12 having laminate layers, the stator teeth having at least one reduced height

13 stator tooth, the reduced height stator tooth having fewer laminate layers

14 than a remainder of the stator teeth, the reduced height stator tooth being

15 positionable adjacent the head stack assembly for allowing the head stack

16 assembly to pivot over the reduced height stator tooth.

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1 17. The disk drive of Claim 16 wherein the reduced height stator tooth has a width greater than
2 a remainder of the stator teeth.

1 18. The disk drive of Claim 16 wherein the reduced height stator tooth has a tooth body
2 portion and a distal shoe extending from the tooth body portion, the shoe is disposed adjacent the
3 magnet.

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1 20. A disk drive comprising:

2 a disk drive base;

3 a head stack assembly rotatably attached to the disk drive base; and

4 a spindle motor attached to the disk drive base including:

5 a spindle motor hub;

6 a magnet radially attached about the spindle motor hub; and

7 a spindle motor stator including:

8 a stator rim; and

9 at least one stator tooth extending from the stator rim, the stator tooth

10 being sized to fit about the magnet in operable communication therewith for

11 rotating the spindle motor hub, the stator tooth having a tooth body portion

12 attached to the stator rim and a distal shoe adjacent the magnet, the distal

13 shoe extends vertically beyond the tooth body portion, the stator tooth being

14 positionable adjacent the head stack assembly for allowing the head stack

15 assembly to pivot over the stator tooth.

1 21. A disk drive comprising:

2 a disk drive base;

3 a head stack assembly rotatably attached to the disk drive base; and

4 a spindle motor attached to the disk drive base including:

5 a spindle motor hub;

6 a magnet radially attached about the spindle motor hub; and

7 a spindle motor stator including:

8 a stator rim formed of at least two vertically stacked stator rim
9 laminate layers;

10 a plurality of stator teeth arrayed about and internally extending from
11 the stator rim, the stator teeth being sized to fit about the magnet in operable
12 communication therewith for rotating the spindle motor hub, the stator teeth
13 each being formed of at least two stator tooth laminate layers, the stator
14 tooth laminate layers being respectively attached to the stator rim laminate
15 layers; and

16 at least one reduced height stator tooth having at least two reduced
17 height stator tooth laminate layers horizontally off-set from and vertically
18 formed towards each other, the reduced height stator tooth being
19 positionable adjacent the head stack assembly for allowing the head stack
20 assembly to pivot over the reduced height stator tooth.

1 22. The disk drive of Claim 21 wherein the at least two reduced height stator tooth laminate
2 layers include an upper laminate layer and a lower laminate layer, the upper and lower laminate
3 layers are horizontally off-set from each other.

1 23. The disk drive of Claim 21 wherein the at least one reduced height stator tooth laminate
2 layers include an upper laminate layer, a lower laminate layer, and an inner laminate layer
3 between the upper and lower laminate layers, the upper and lower laminate layers are
4 horizontally off-set from the inner laminate layer.

1 24. The disk drive of Claim 21 wherein the at least two reduced height stator tooth laminate
2 layers include an upper laminate layer and a lower laminate layer, the lower laminate layer
3 extends horizontally from the stator rim, the upper laminate layer is formed towards the lower
4 laminate layer.

- 1 25. A disk drive comprising:
- 2 a disk drive base;
- 3 a head stack assembly rotatably attached to the disk drive base; and
- 4 a spindle motor attached to the disk drive base including:
- 5 a spindle motor hub;
- 6 a magnet radially attached about the spindle motor hub; and
- 7 a spindle motor stator including:
- 8 a stator rim formed of at least two vertically stacked stator rim
9 laminate layers;
- 10 at least one stator tooth internally extending from the stator rim, the
11 stator tooth being sized to fit about the magnet in operable communication
12 therewith for rotating the spindle motor hub, the stator tooth being formed of
13 at least two stator tooth laminate layers horizontally off-set from and
14 vertically formed towards each other, the stator tooth laminate layers being
15 respectively attached to the stator rim laminate layers, the stator tooth being
16 positionable adjacent the head stack assembly for allowing the head stack
17 assembly to pivot over the stator tooth.

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1 26. The disk drive of Claim 25 wherein the stator tooth laminate layers include an upper
2 lamine layer and a lower laminate layer, the upper and lower laminate layers are horizontally
3 off-set from each other.

1 27. The disk drive of Claim 25 wherein the stator tooth laminate layers include an upper
2 lamine layer, a lower laminate layer, and an inner laminate layer between the upper and lower
3 lamine layers, the upper and lower laminate layers are horizontally off-set from the inner
4 lamine layer.

1 28. The disk drive of Claim 25 wherein the stator tooth laminate layers include an upper
2 lamine layer and a lower laminate layer, the lower laminate layer extends horizontally from the
3 stator rim, the upper laminate layer is formed towards the lower laminate layer.

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1 29. A disk drive comprising:
2 a disk drive base;
3 a head stack assembly rotatably attached to the disk drive base; and
4 a spindle motor attached to the disk drive base including:
5 a spindle motor hub;
6 a magnet radially attached about the spindle motor hub; and
7 a spindle motor stator including:
8 a stator rim; and
9 a plurality of stator teeth arrayed about and internally extending from
10 the stator rim, the stator teeth being sized to fit about the magnet in operable
11 communication therewith for rotating the spindle motor hub, the stator teeth
12 having laminate layers formed to a first thickness, the stator teeth having at
13 least one reduced height stator tooth, the reduced height stator tooth having
14 laminate layers formed to a second thickness less than the first thickness, the
15 reduced height stator tooth being positionable adjacent the head stack
16 assembly for allowing the head stack assembly to pivot over the reduced
17 height stator tooth.

1 30. The disk drive of Claim 29 wherein the reduced height stator tooth has a width greater
2 than a remainder of the stator teeth.

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